PROJECT TITLE : NITRATE-REDUCTION BY CONTROLLED FERMENTATION

PERIOD COVERED : JANUARY 4 - FEBRUARY 24 1982

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1. TRIALS

LEAR Trial 14

After the fermentor had been completely overhauled by a Chemap engineer (1), it was possible to re-start the pilot-plant with LEAR trial 14 on February 1.
The objective of this trial was to perform a complete denitration of the extract and to keep the fermentor sterile over a period of several weeks.
In fact this was achieved for several days at pH 4.5. As soon as the pH was increased, contamination was observed in the fermentor. It had to be stopped after two days and re-inoculated.
Because the new centrifuge was not ready for operation, the trial was not run in the closed-loop system during the first two weeks. After the separator had been started-up, the denitrated extract was recycled back to the extractor. After three days of running in this mode of operation, the fermentor was found to be heavily contaminated. Since the pH had been increased just before recycling the extract, it has not yet been determined whether the main cause of contamination was this increase in pH or the recycling itself.
Contamination was also noticed in the extract entering the fermentor despite the fact that the temperature of the sterilization heat-exchangers had been increased and the raw water had been ultra-filtered.

2. LABORATORY

In order to have more efficient control of the sterility, some new tests are being introduced by Mr. Hofer in the laboratory programme.

3. PRE-ENGINEERING STUDY

The pre-engineering study initiated in October 1981 (2) was completed and distributed. The capital investment and operating costs of three different variants of process plants are presented (3).

4. REFERENCES

1. Lüthi-N, Monthly Report : Pilot-Plant Operations, January 21, 1982

2. Schulthess-D, Monthly Report : Nitrate-Reduction by Controlled Fermentation, October 22, 1981

3. Ruf-C, Lear Project : Pre-engineering Study, February 1982.

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